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(71) Applicant (<i>for all designated States except US</i>): DATEC LTD. [GR/GR]; 28 Dorieon Street, GR-118 52 Athens (GR). (72) Inventor; and (75) Inventor/Applicant (<i>for US only</i>): STAMELAKOS, Dimitrios [GR/GR]; 28 Dorieon Street, GR-118 52 Athens (GR).			
<p>(54) Title: AUTOMATIC ORDER HANDLING SYSTEM</p> <p>(57) Abstract</p> <p>This invention refers to an automatic order handling system which will be used for the upgrading of the traditional way of client servicing in the restaurants. The automatic order handling system consists of: A. wireless order handling terminals. These terminals are used for order entry as well as to convey messages, sent from the central system; B. central order handling system which receives all orders and distributes the informations to the below peripheral units of the system (C, E and F); C. small size order printers (3) which print the orders received (classified per increasing number); D. dedicated order acknowledgement keyboards (4) placed at the proper positions (on the service counter) near the cash registers. These keyboards can be incorporated and form part of the order printers; E. overhead screens (2) (service counter screens) which show in detail the pending orders classified per table; F. overhead screens (6) fixed at the proper spots in the kitchen area which show in detail pending orders (classified per ordered item); G. dedicated keyboards (7) placed at the proper spots in the space existing between kitchen and service counter desk (order preparation area); H. dedicated take away terminals (8) which are properly placed in the shop with the purpose to serve the "take away" ordering customers. The automatic order handling system according to above-mentioned is characterized by the fact that the communication of the central system to the terminals is performed by wireless means (radiofrequency or infrared) and it carries bidirectional informations.</p>			

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- 1 -

AUTOMATIC ORDER HANDLING SYSTEM

This invention refers to an Automatic order handling system which will be used for the upgrading of the traditional way of client servicing in the Restaurants.

The automatic order handling system consists of:

- 5 A. Wireless order handling terminals. These terminals are used for order entry as well as to convey messages, sent from the Central system. These terminals can be of two different kinds:
 - a. They can be in the form of Wireless Order Handling Tables (WOHT) (fig. 7) or
 - b. They can be in the form of Wireless Take Away Terminals which again can be constructed either in the shape appearing in fig.9.
- 10 B. Central order handling system **(5)** which receives all orders and distributes the informations to the below peripheral units of the system (C, E and F).
- 15 C. Small size order printers **(3)** (figs: 1, 3, 4, 5) which print the orders received (classified per increasing number).
- 20 D. Dedicated order acknowledgement keyboards **(4)** (figs: 3, 4 and 5) placed at the proper positions (on the service counter) near the cash registers. These keyboards can be incorporated and form part of the order printers.
- 25 E. Overhead screens **(2)** (service counter screens figs: 1, 3, 4) which show in detail the pending orders classified per table.
- 30 F. Overhead screens **(6)** fixed at the proper spots in the kitchen area (figs: 1 and 6) which show in detail pending orders (classified per ordered item).
- 35 G. Dedicated keyboards **(7)** (figs: 1 and 6) placed at the proper spots in the space existing between kitchen and service counter desk (order preparation area).
- 40 H. Dedicated Take away terminals **(8)** (figs: 1 and 10) which are properly placed in the shop with the purpose to serve the "take away" ordering customers. These customers upon placing their order from these terminals they will get a printed receipt (with their order description and a queue number on it) and they will be prompted to wait at the shop space **(22)** where they will be informed by appropriate monitors for their

- 2 -

"order ready" message and they will pick their order from the service counter desk.

More specifically the automatic order handling system consists of :

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1) WIRELESS ORDER HANDLING TABLES (WOHT)

These terminals (1) are placed on each table of the shop or incorporated into it (figs:7 and 8) forming a wireless order handling table.

10 Order handling terminal is in the form of a plane metal plate covered with an acrylic cover, containing the pictures of the offered foods as well as the keyboard and display.

The wireless order handling terminal (WOHT) will be offered in various finishes to match the surrounding decoration of the shop.

15 The WOHT's surface is divided into two identical sectors (ordering sides A and B, figs: 7 and 8)

Each sector consists of the following subsectors:

20 a. Food Menu subsector divided into rectangular segments, each one demonstrating an ordering item picture, together with an ordering code number and its name (9) for the WOHT in fig 7 and (15) for the "take away" terminal fig.9) and an LED lamp illuminated when the particular item is selected by the customer.

25 b. Drink menu subsector offered by the shop together with the drink corresponding ordering codes, their names, (10) for the (WOHT) in fig.7 and (16) for the "take away" terminal in fig.9) and corresponding LED'S illuminated when the particular item is selected by the customer.

30 c. Operating subsector with keyboard LCD display, speaker, (11) for the WOHT in fig.7 ,(17) and (18) for the "take away" terminal in fig.9). Order placement is performed by means of the corresponding keys and the display while voice synthesized messages are played-back through the speaker, facilitating the use of the terminal and attracting the customer's attention when orders are ready to be picked-up.

35 By using this terminal the following operations can be performed:
i. Customer's communication language with the system can be selected by pressing the key with the flag that corresponds to the desired language (13) (fig.7), (19) for the "take away" terminal (fig.9).

- 3 -

Possible choices are ENGLISH/FRENCH/GERMANY and ITALIAN, but any language's messages can be programmed in the system for both vocal and written (visual) informations presentation (Default language is set by the manufacturer).

5

- ii. Selection of the items to be ordered with editing possibilities through the incorporated menu selection subsector. For this purpose there are Food Menu subsector and Drink Menu Subsector.
- 10 iii. Order confirmation and dispatch to the central order handling system.
- 15 iv. Vocal and visual customer's acknowledgement of order ready, messages accompanied by informations as, order cost/order pick-up point e.t.c.
- 20 v. Possibility of "keeping the customer busy" function by allowing him-her to play a game or view latest news in brief while waiting for the order preparation.

2) WIRELESS TAKE AWAY TERMINALS

These terminals (figs: 9 and 10) are placed in the proper spots in the shop area 25 ⑧ in (fig.1) and are dedicated to handle orders for packaged foods.

These terminals can be in two forms:

- a. In the form of a Wireless order handling table (fig.9) placed on a hinged stand and having a printing mechanism incorporated to it. Its operation (apart from the printing mechanism) is quite similar to that of the WOHT and is fully described in previous chapter. The printing mechanism is used to print ordered items/queue number and present the ticket to the user. The terminal is wirelessly controlled by the central order handling system.
- 35 b. In the form of a cylindrical container containing a Multimedia terminal with a touch-screen ⑨ in (fig.10) and a printing mechanism incorporated to it. The customer's order and items together with a queue number are printed on the terminal's printer ⑩ (fig.10) and automatically presented to the customer. The whole terminal is wireless controlled by the central order handling system terminal can be fixed in a mechanism (contained into the container) which will allow the customer (by operating on appropriate buttons ⑪ in fig.10) to adjust the height of it to better suit the operation. This height adjustment could also be performed by appropriate sensors fixed in the surface of the container.

- 4 -

These sensors could sense one's height and accordingly adjust the terminal's position. Appropriate software contained in the terminal would allow all predescribed choices to be performed from this terminal. A set of speakers incorporated to the cylirdrical container would convey usefull vocal messages for the operation. Written instructions for system's use can appear in available space (24) (in fig.10). Both terminals present a ticket to the customer indicating a queue number. The customer can then wait at the specially arranged area of the shop (22) (in fig.1) and wait for his queue number to appear in the information screens placed in this area. Queue number information can also be conveyed to the waiting customers by appropriately placed speakers in this area.

3) **CENTRAL ORDER HANDLING SYSTEM.**
This system (5) consists of a dedicated computer with a wireless communication system incorporated for communication with the terminals. This system collects all orders coming from the WOHT's and relay appropriate informations to the various overhead screens (counter or kitchen areas) and order printing devices organizing the whole order preparing system, handled by the shop's personell.

4) **ORDER PRINTERS.**
These printers (2) are placed on the counter desk and print orders as they are coming by the WOHT's or the take away terminals. Each printed order presents informations on order placement time, order source/items ordered e.t.c. These printers are also printing usefull system operation paramenters like: order preparation times/order pick up times/WOHT's problems e.t.c

5) **DEDICATED ORDER ACKNOWLEDGEMENT KEYBOARDS.**

These keyboards (4) (figs: 2,3 and 5) are placed at proper spots on the service counter desk near the cash registers and are used to input, order ready messages to the appropriate WOHT's while at the same time informing the system, that the particular orders have been executed and should be erased from the system's screens, causing new orders from the system's queue memory, to appear to the screens or the printers for execution . These keyboards could be incorporated to the order printer units.

- 5 -

6) DEDICATED KITCHEN KEYBOARDS.

These keyboards (7) (figs: 1 and 6) are placed at the proper spots in the space existing between kitchen and counter desk (order preparation area).

5 These keyboards are used by the personnel responsible to relay items prepared by the kitchen staff, to the personnel operating at the counter desk preparing and despatching the customer's orders. By means of these keyboards it is made possible to keep the system informed at any time for the:

10 i. Items ordered and not yet arrived to the order preparation area thus delaying the preparation of the particular order.

ii. Items to be prepared in quantities from the kitchen in order to serve increased demands from the customers.

7) COUNTER OVERHEAD SCREENS.

These screens (2) are hanging over the counter desk presenting at any time the orders pending to be serviced.

20 By means of these screens it is made possible to the personell operating in the counter desk to:

i. Have a clear picture of the orders-pending to be serviced arranged in a per table or a per time placed queued manner.

25 ii. Have a clear picture of the delayed orders alarming them to check for the reasons of the delays.

iii. Monitor simultaneously up to 6 orders (on each screen) pending to be serviced. This means that at the same time 6 orders can be prepared and forwarded.

8) KITCHEN OVERHEAD SCREENS

These screens (6) are hanging over the appropriate spots in the kitchen area presenting at any time the demand for various items to be prepared in totalized form. By means of these screens it is made possible to the kitchen personell to:

35 i. Have a clear picture of the demand of particular items to be prepared in a per item totalized form.

40 ii. Have a picture of a continuous flow of items to be prepared entering a queue and appearing in synchronization with the orders execution process thus ensuring an optimum level of cooperation of the kitchen personell with the order collection system.

- 6 -

C L A I M S

1. The automatic order handling system consists of the following units appearing in fig.1 :
 - 5 The wireless order handling terminals WOHT ①, The central order handling system ⑤, Small size order printers ③, Dedicated order acknowledgement keyboards ④ (placed on the service counter or incorporated into the order printer modules). Overhead screens ② placed over the service counter area. Overhead screens ⑥ placed in the kitchen area. Dedicated keyboards ⑦ placed at the in between service counter and kitchen area and the wireless take away ⑧ terminals placed in the proper shop spaces for use by customers ordering packaged food.
 - 10 This system is characterized by the fact that it automatically handles orders entered either from the wireless order handling tables or from the wireless "take away" terminals.
 - 15 The wireless order handling table's surface is made of transparent acrylic sheet beneath which there:
- 20 a. Exist a food menu in the form of a laminated sheet containing the pictures of the offered foods ⑨,(⑯) for the "take away" terminal) in fig.9 and screen picture ⑯ for the "take away" terminal in (fig.10) their ordering codes and their names in the form of small rectangular segments each illuminated by an LED, illuminated when the corresponding item is selected (blinking items in the case of screen picture).
- 25 b. On the same laminated sheet there exists a drinks menu area ⑩ , ⑯ for the "take away" terminal in (fig.9) and screen picture ⑯ for the "take away" terminal in (fig.10).
 - 30 Each drink is also described by its ordering code its name and an LED illuminated when the drink is selected (blinking items in the case of screen).
 - 35 c. A keyboard ⑰ or order placement (soft keys) on touch screen ⑯ for the "take away terminal (in fig.10)
 - 40 d. An alphanumeric LCD display ⑪ which used in conjunction with the keyboards allows for order view, order acknowledge information, order ready informations, order total cost and other messages conveying useful information to the user (appropriate pictures on the screen ⑯ in the case of the "take away" terminal in (fig.10).

- 7 -

- e. A watertight speaker unit (14) (20) for the "take away" terminal) and (23) in the case of the "take away" terminal in (fig.10) convey vocal messages formed by the terminal's voice synthesis unit, facilitating the customer's communication with the system.
5 The sound's volume is automatically adjustable according to surround noise.
- f. Language communication selection keys (13) (19) for the "take away" terminal) (in fig.9) for selecting one of four available communication languages. Apart of the existing numeric keys, there also exist several keys with the following functions:
10
- g. "N" key: Allows the customer to watch the latest news in brief out of a 4 choices selection menu. The relayed informations are read on the LCD display as short messages advanced (scrolled by use of the ↓ and ↑ keys).
15
- h. "G" key: Game key, this key allows the customer to play a game at his/her idling (order preparation waiting time) giving a chance to win an item defined by the shop (possibly a drink).
20
- i. "C" key: Cancel key for use by the customer to cancel part or all of his order.
25
- j. "SP" key : for muting voice messages
- k. "√" key: for item selection confirmation.
30
- l. [] key: for order dispatch
- m. "V" key: is the view key for viewing order contents.
35
- n. ↑ and ↓ keys: by which text scrolling operations are performed
- o. "H" key: is the Help key, by which the customer calls for help from the shop's personnel.
All above funtions performed by keys described in paragraphs f, g, h, i, j, k, l, m, n, o, above in the case of "take away" terminal in (fig.10) are performed by "soft keys" through the touch screen.
40
- p. Power supplied to the terminals is by means of a 12 Volts battery (except in the case of "take away" terminals (figs: 9 and 10) where mains power is required.)

- 8 -

2. The automatic order handling system according to claim 1 is characterized by the fact that the communication of the central system to the terminals is performed by wireless means (Radiofrequency or Infra Red).
5. The automatic order handling system according to claims 1 and 2 is characterized by the fact that the wireless order handling table is powered by autonomous power source (rechargeable battery in the case of WOHT'S).
10. The automatic order handling system according to claims 1, 2 and 3 is characterized by the fact that in between the menu items appearing on their surface there exist space for products advertisement (some rectangles are devoted to this purpose).
15. Same function can be performed on the screen of the "take away" terminal appearing (fig.10), during its idling time.
20. The automatic order handling system according to claims 1, 2, 3 and 4 is characterized by the fact that the terminal presents vocal/ multilingual communication messages to the customer.
25. The automatic order handling system according to claims 1, 2, 3, 4 and 5 is characterized by the fact that it allows the customer to view latest news from the table.
30. The automatic order handling system according to claims 1, 2, 3, 4, 5, 6 and 7 is characterized by the fact that it incorporates a menu in the table's surface for items selection (or in the screen in the case of "take away" terminal in fig.10).
35. The automatic order handling system according to claims 1, 2, 3, 4, 5, 6, 7 and 8 is characterized by the fact that the (WOHT) contains 2 identical sections for 2 persons simultaneous order handling capability.
40. The automatic order handling system according to claims 1, 2, 3, 4, 5, 6, 7, 8 and 9 is characterized by the fact that the "take away" terminal can be realized as a multimedia terminal with incorporated (order/queue number central order handling) printing mechanism (26) in (fig. 10)

- 9 -

5

communicating wirelessly with the central order handling system and presenting the possibility to adjust its operating position (height) either manually by operating on the appropriate buttons (28) (in fig.10) or automatically. Moreover it allows for vocal messages, conveyed to the customer through its incorporated speakers (23) (fig.10).

1/10

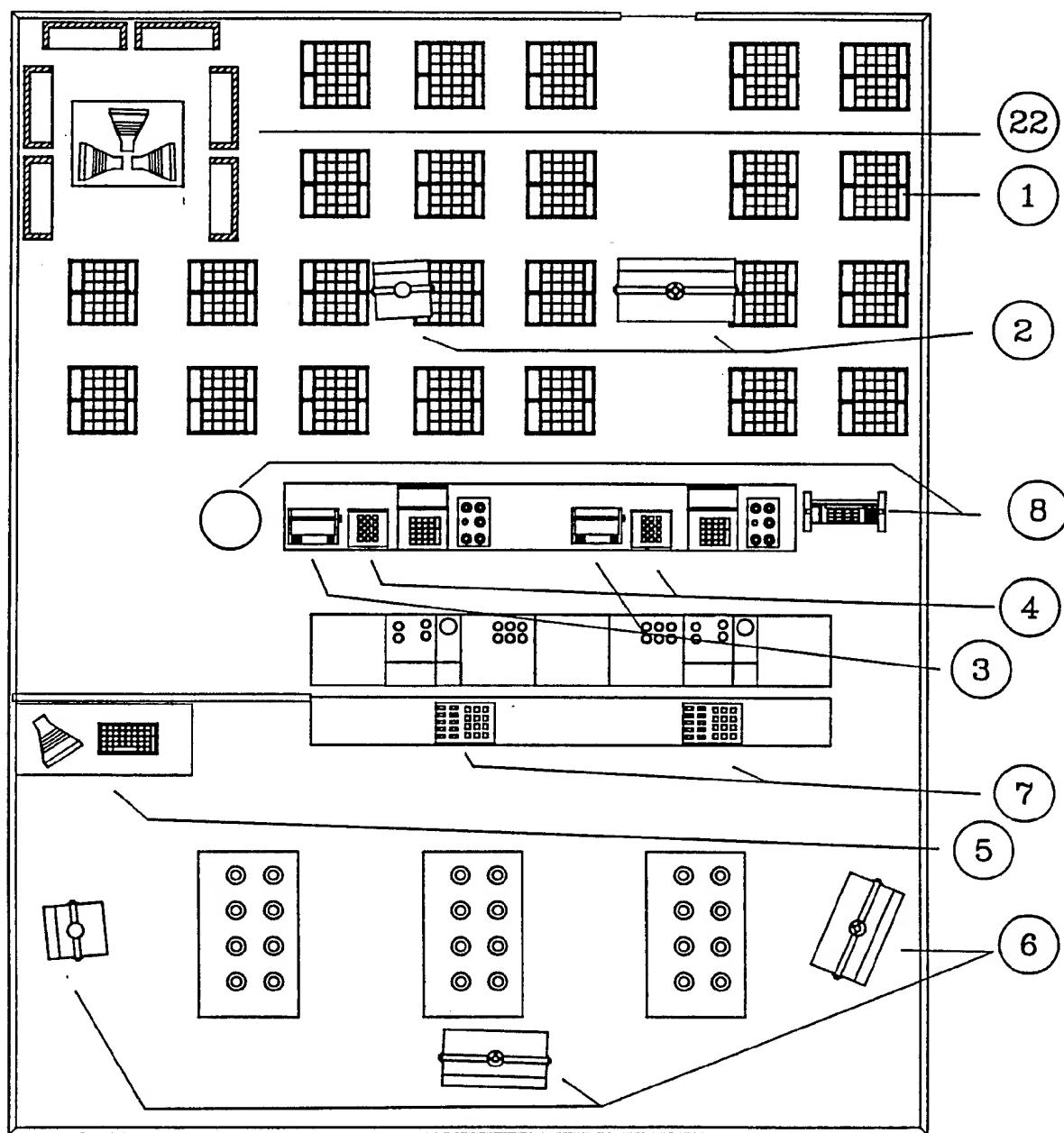
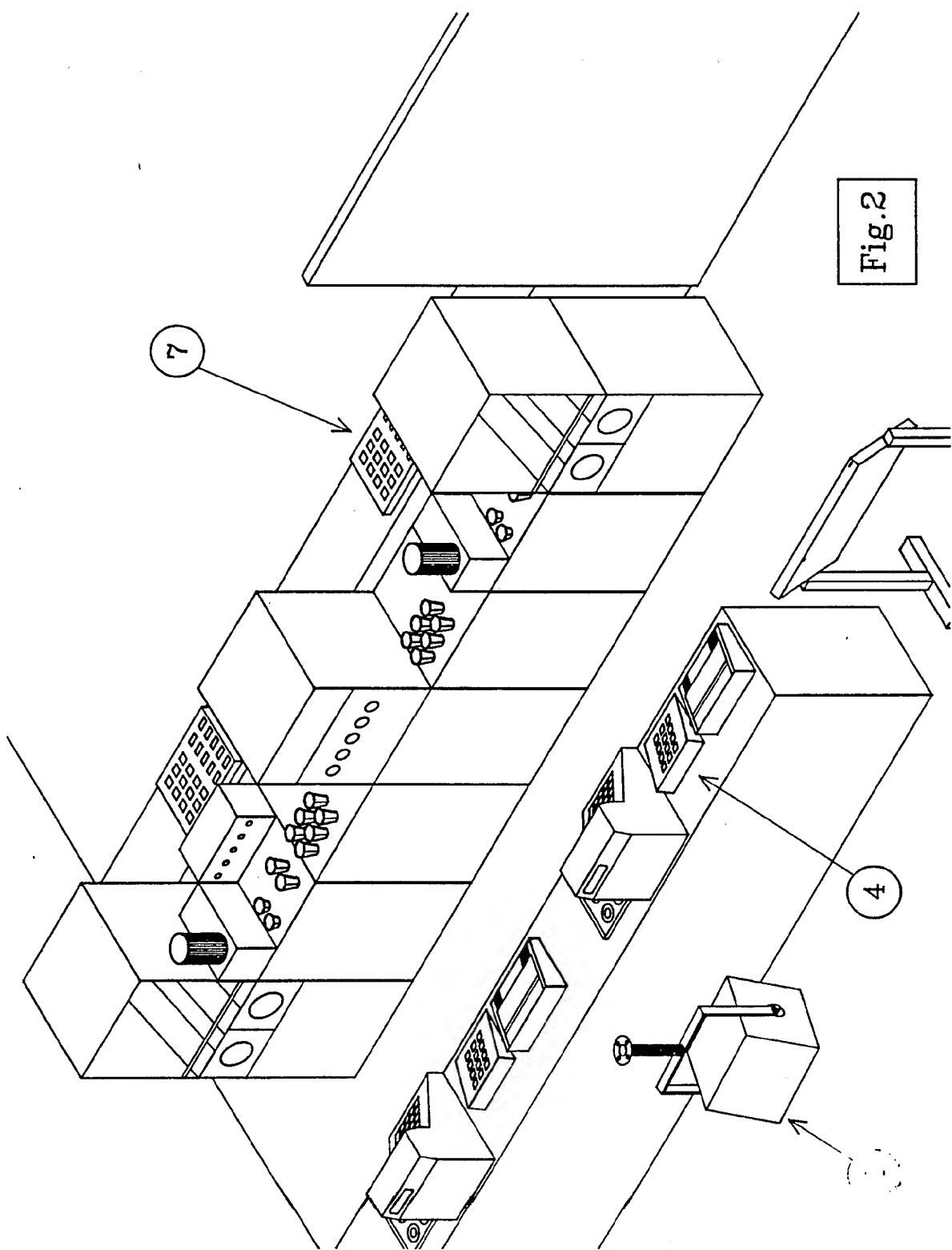
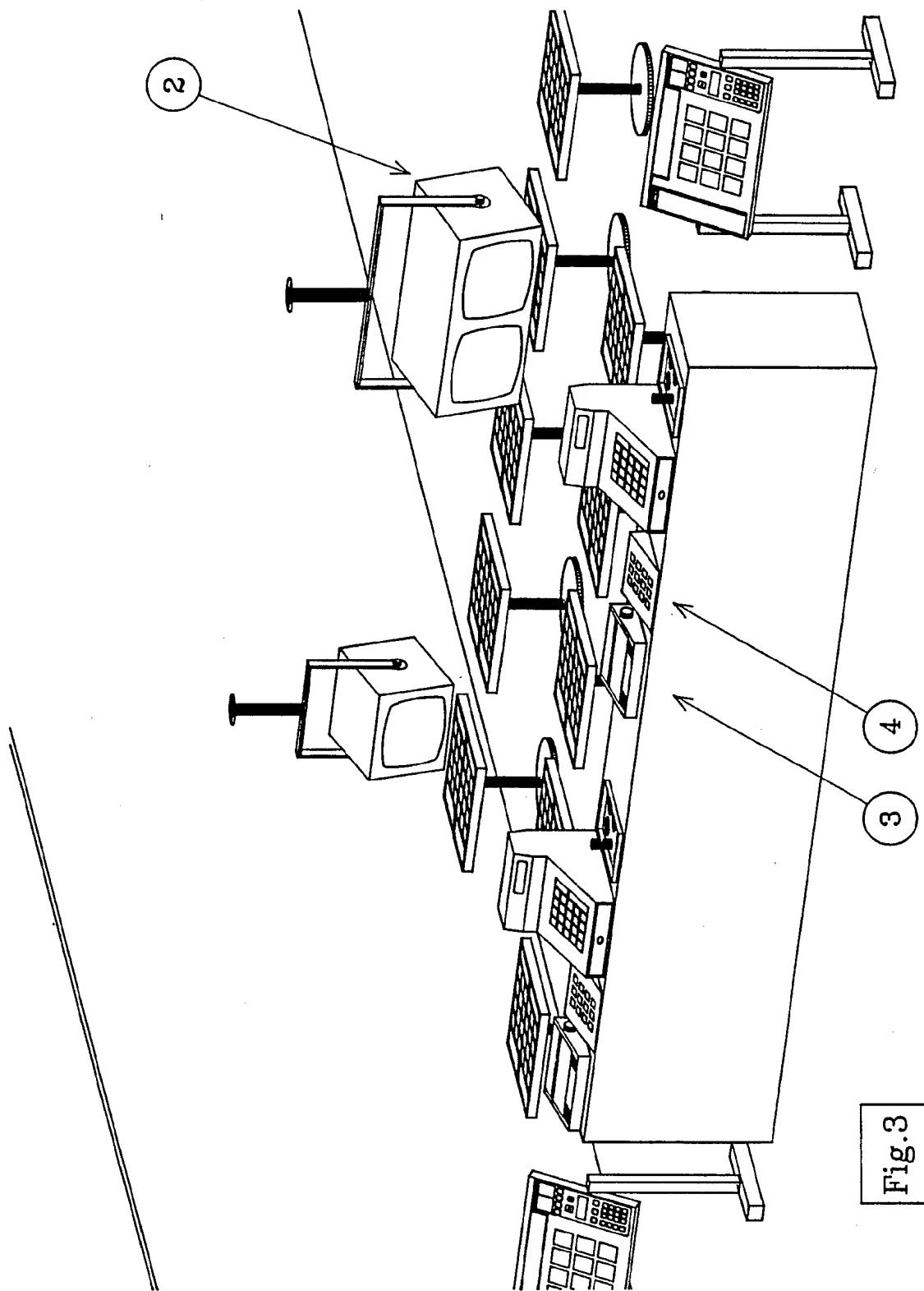


Fig.1

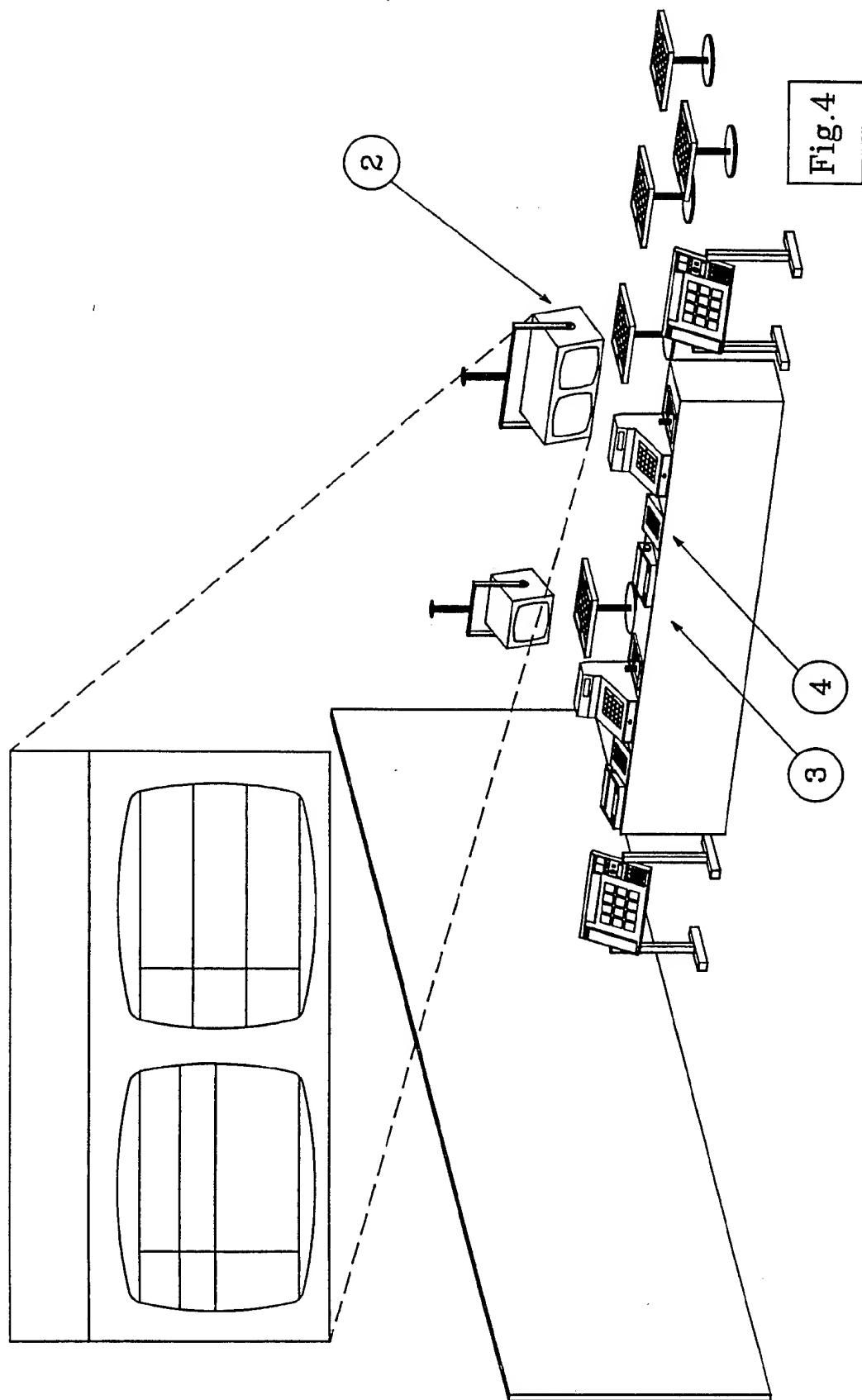
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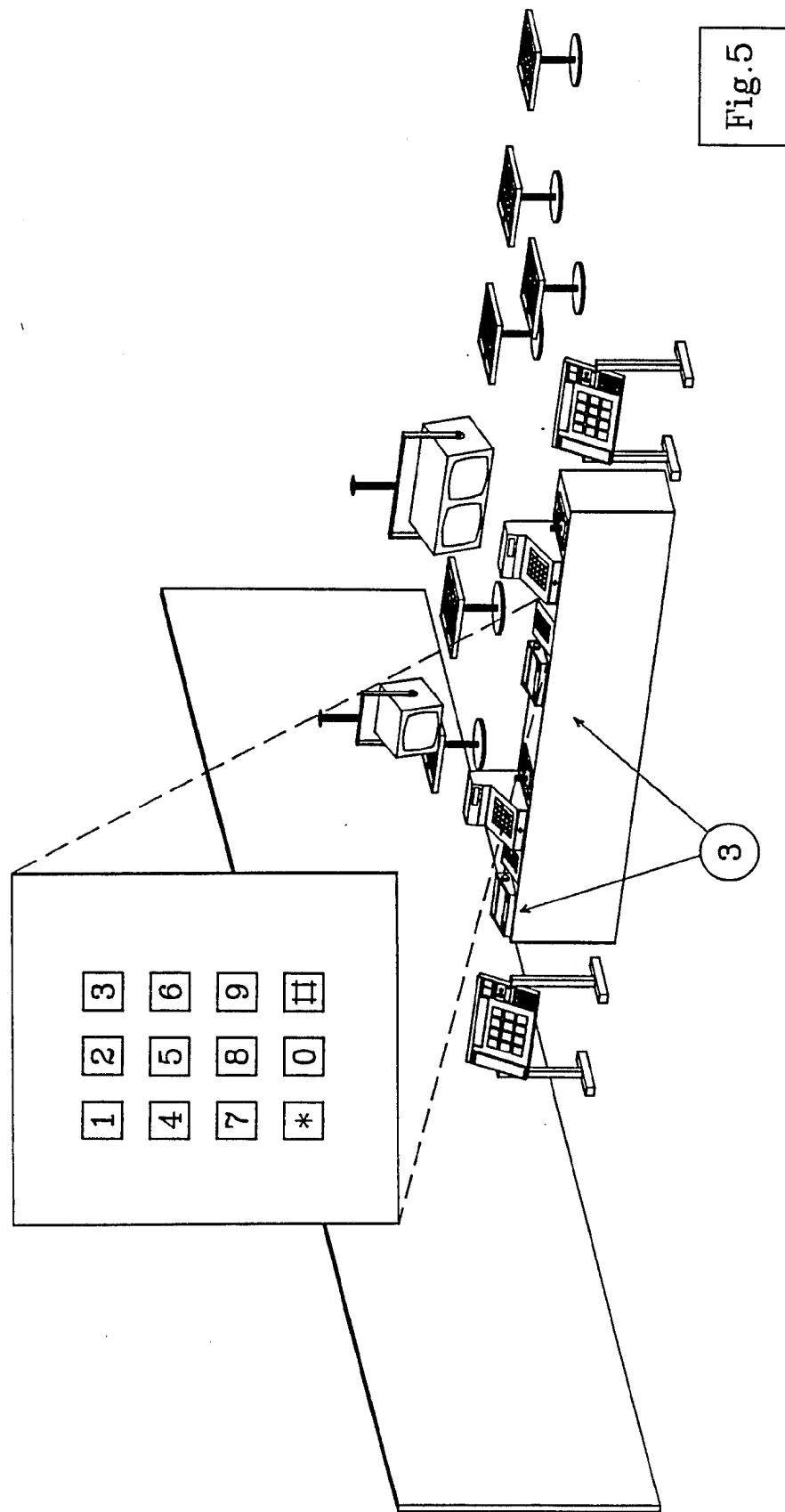
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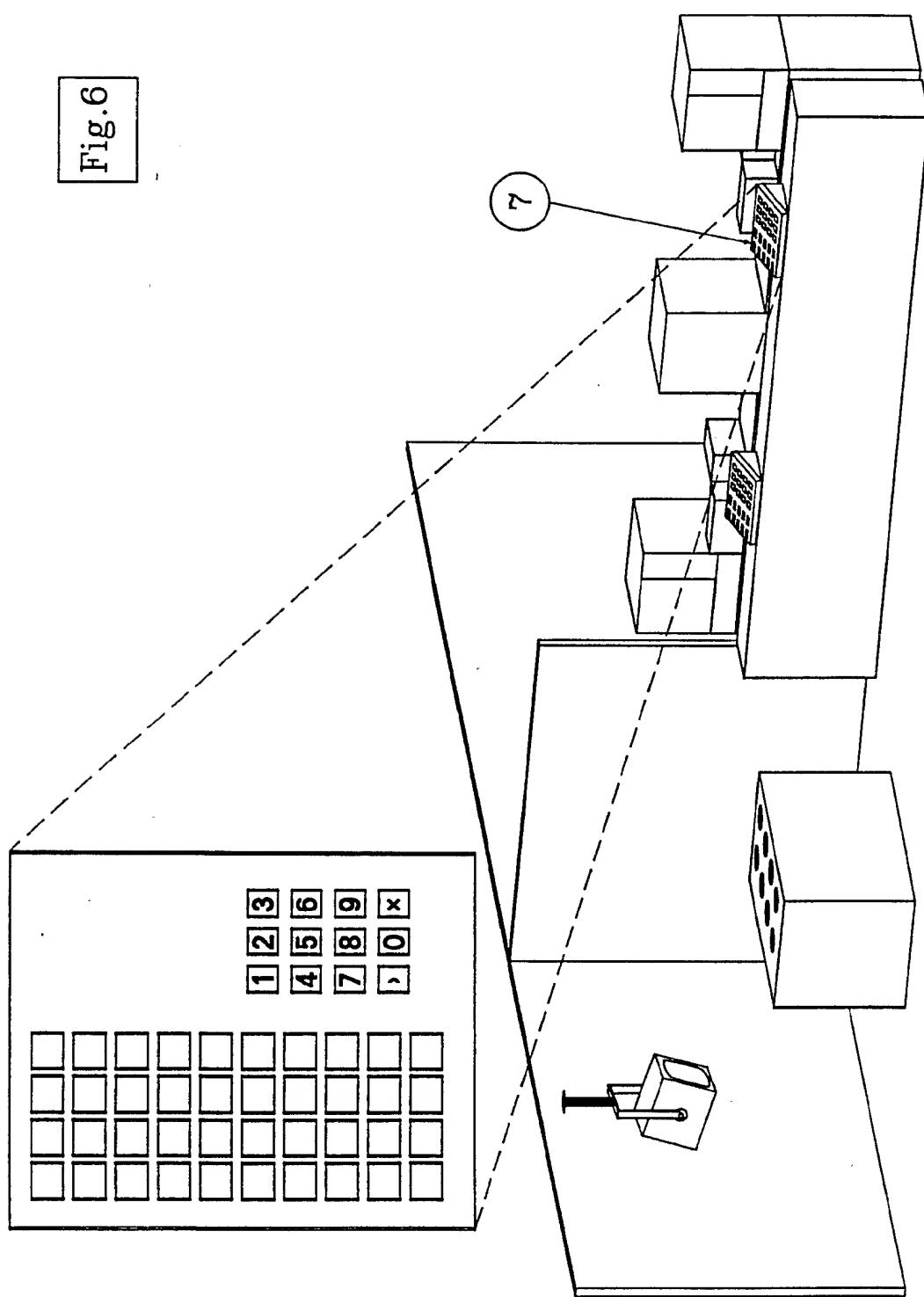
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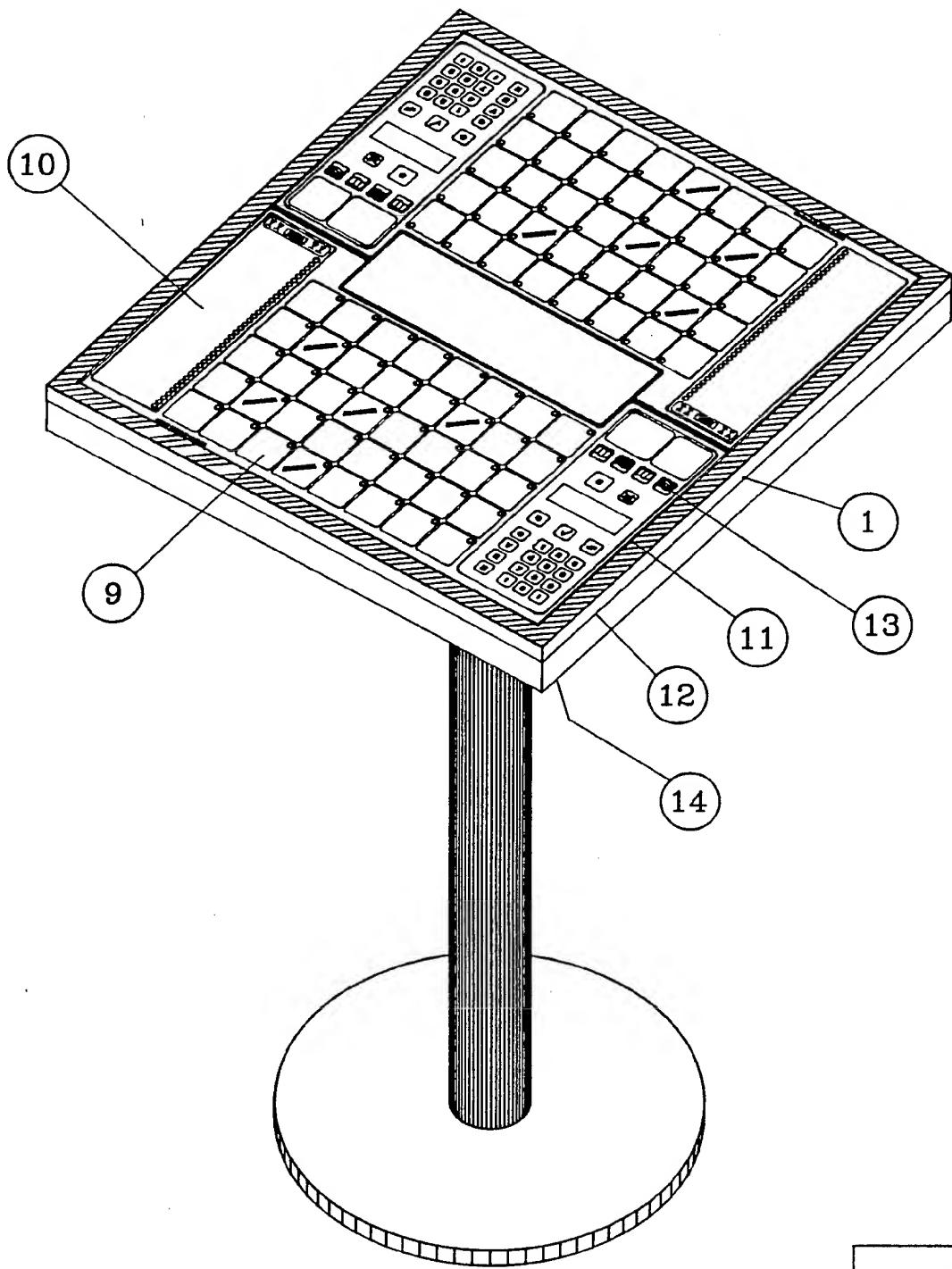
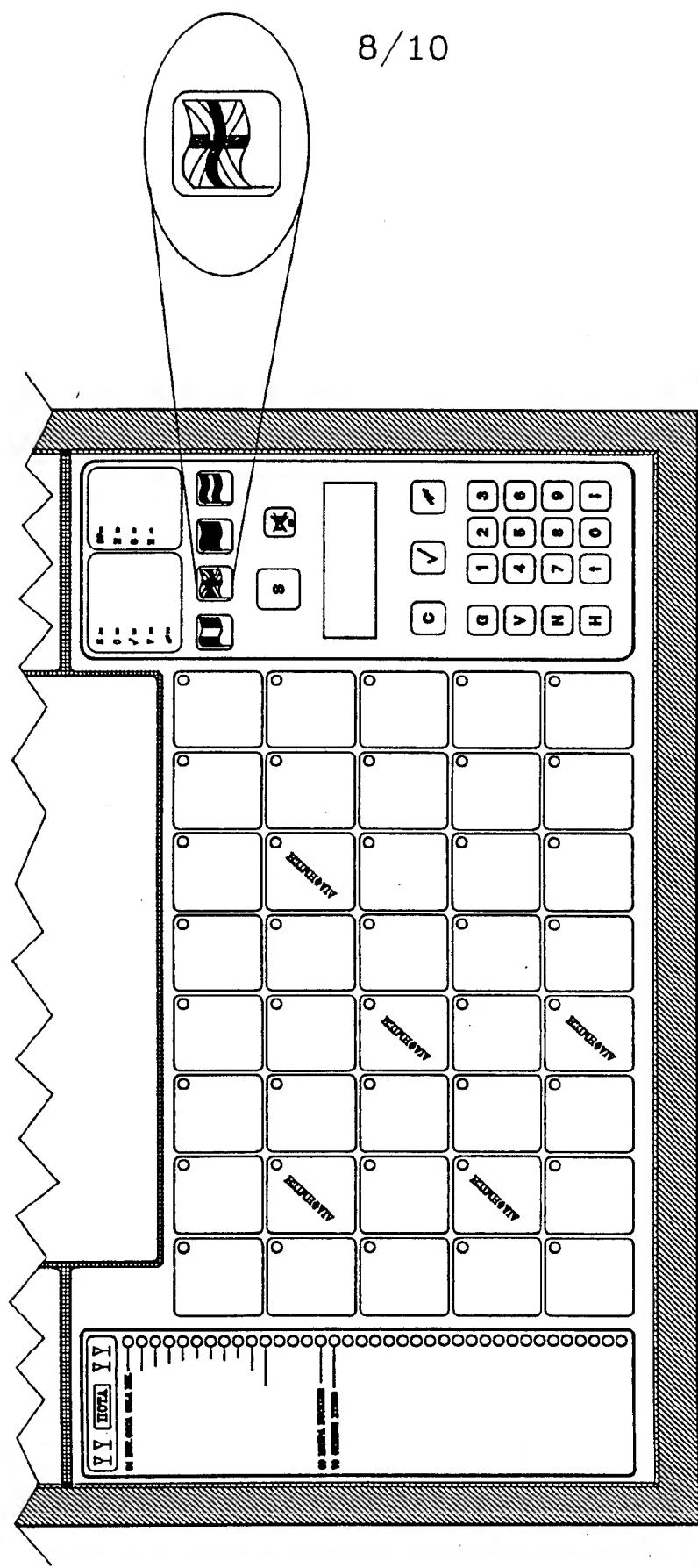


Fig.7

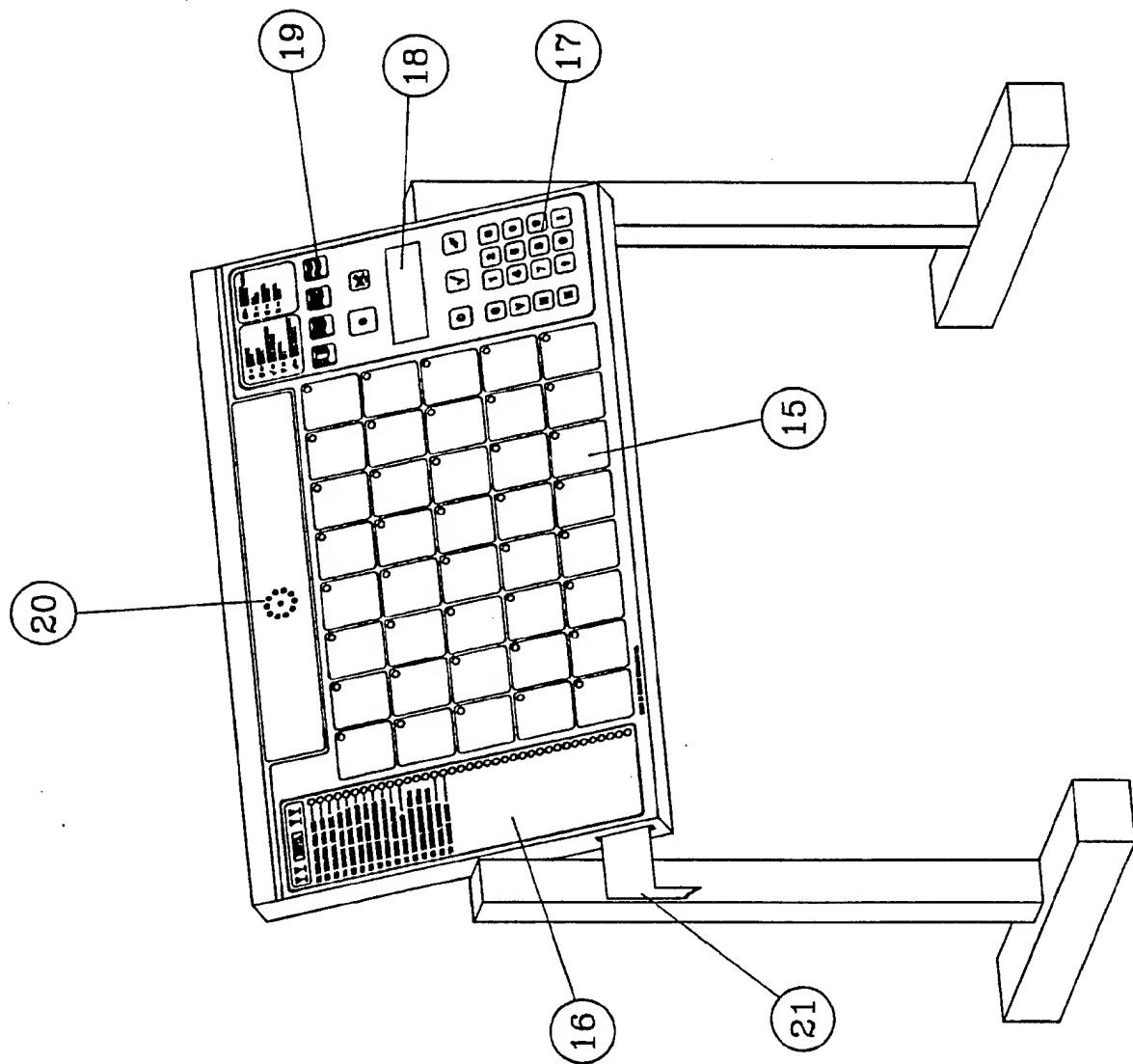
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Fig. 8



9/10

Fig.9



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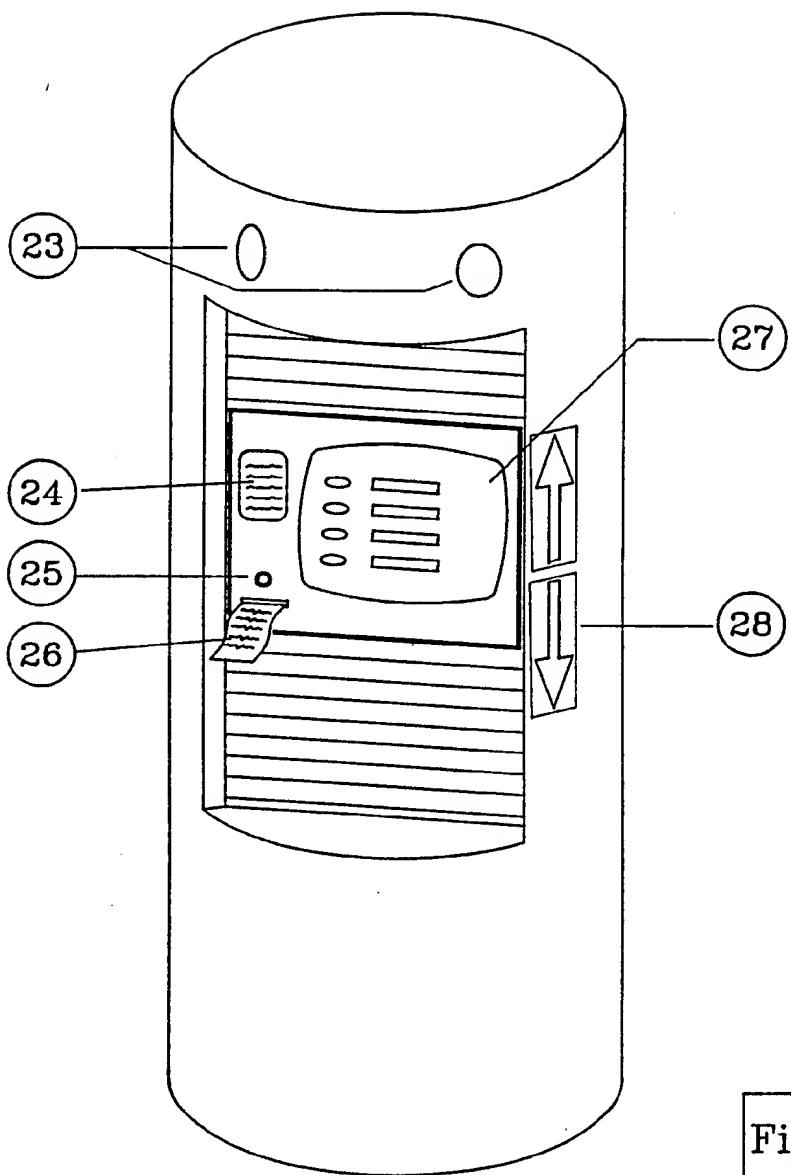


Fig.10

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GR 95/00009

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 G06F17/60 G07G1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 6 G06F G07G G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,4 547 851 (KURLAND LAWRENCE G) 15 October 1985 see the whole document ---	1-10
X	US,A,5 128 862 (MUELLER RAYMOND J) 7 July 1992 see the whole document ---	1-10
X	US,A,5 235 509 (MUELLER RAYMOND J ET AL) 10 August 1993 see the whole document ---	1-10
X	US,A,4 553 222 (KURLAND LAWRENCE G ET AL) 12 November 1985 see abstract ---	1,4-7 -/-

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1

Date of the actual completion of the international search

7 September 1995

Date of mailing of the international search report

27.09.95

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Suendermann, R

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE,A,32 15 035 (PRIV. INST. FÜR PHYSIKAL. TECH. AUFTRAGSFORSCH. ;PEJAS W. ; BRAUCH U.) 3 November 1983 see abstract; claim 1; figure 1 -----	2

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
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US-A-5235509	10-08-93	US-A- 5353219 US-A- 5128862	04-10-94 07-07-92	
US-A-4553222	12-11-85	NONE		
DE-A-3215035	03-11-83	NONE		